NAME: DATE:

Mastery Assessment of Unit 2 (Practice version 109)

Question 1

Let f represent a function. If $f[33] = 40$, then there exists a knowable solution to the equation below.

$$y = \frac{f[5x + 23]}{4} - 7$$

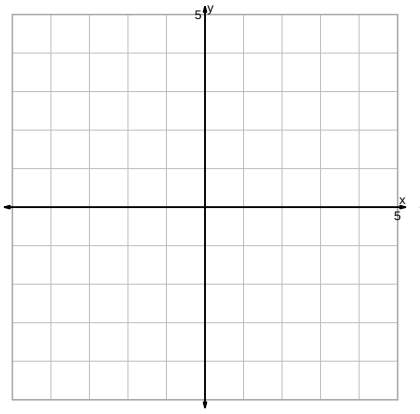
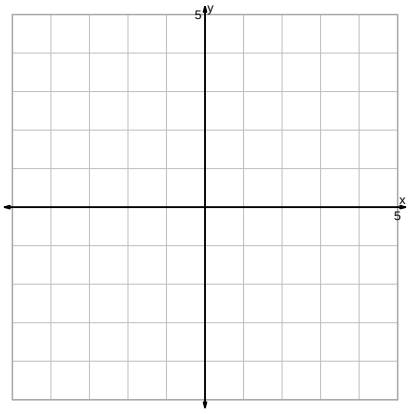
Find the solution.

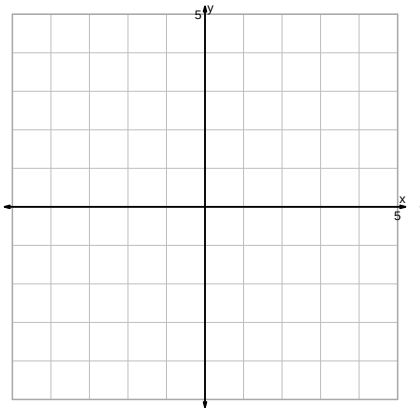
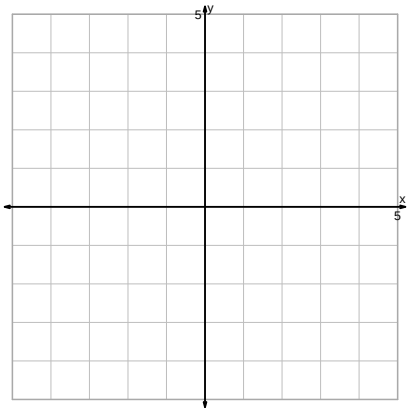
$x =$

$y =$

Question 2

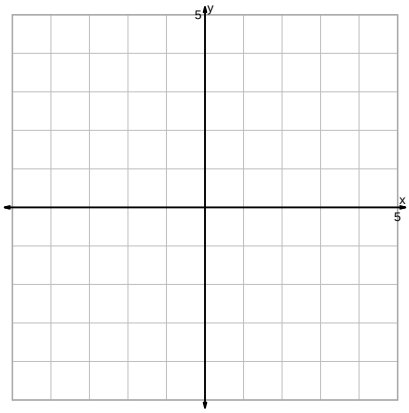
Graph the equations accurately. For each integer-integer point on the parent, indicate the corresponding point precisely. Also, with dashed lines, indicate any asymptotes.

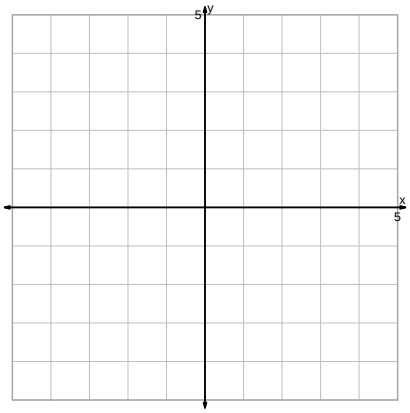
$y = \sqrt[3]{x - 2}$  $y = x^2 - 2$ 

$y = \sqrt[3]{x + 2}$  $y = \left(2x\right)^3$ 

Question 2 continued...

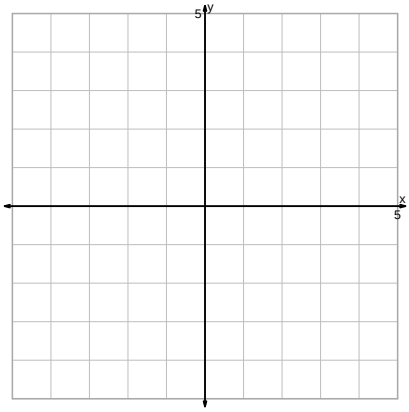
$y = \sqrt{-x}$

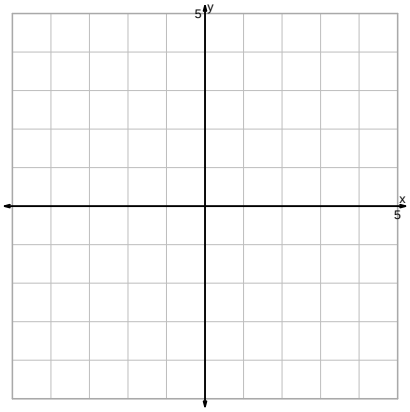




$y = \frac{x^2}{2}$

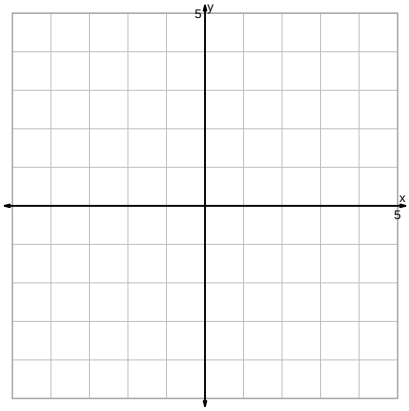
$y = 2 \cdot \log_2(x)$

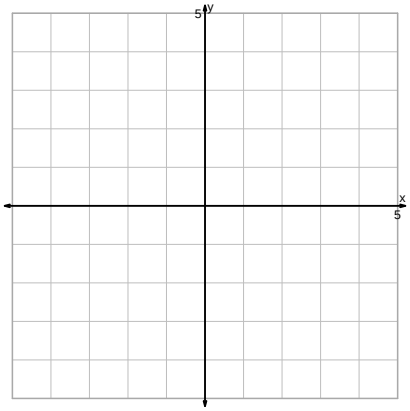




$y = -\log_2(x)$

$y = \left(\frac{x}{2}\right)^3$

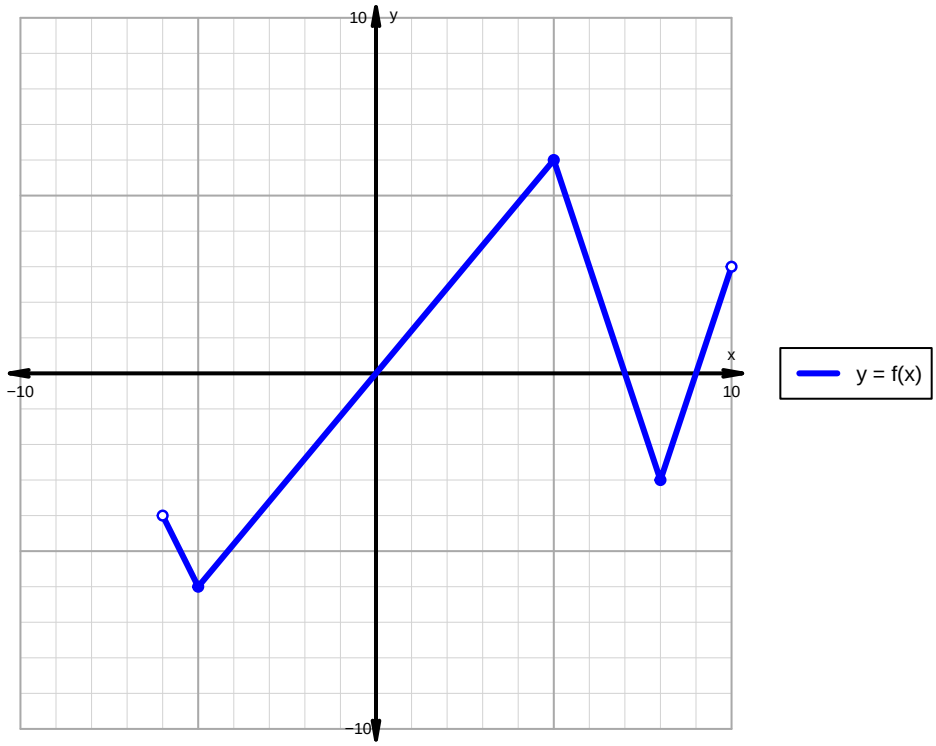




$y = \sqrt{x} + 2$

Question 3

A function is graphed below.



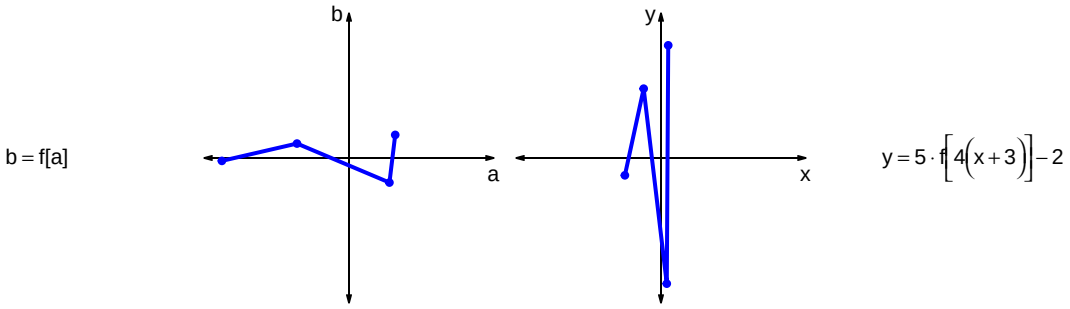
Indicate the following intervals using interval notation.

Feature	Where
Positive	
Negative	
Increasing	
Decreasing	
Domain	
Range	

Question 4

Let f represent a function. The curves $b = f[a]$ and $y = 5 \cdot f[4\,(x+3)] - 2$ are represented below in a table and on graphs.

a	b	x	y
-88	-2	-25	-12
-36	10	-12	48
28	-17	4	-87
32	16	5	78



a. Write formulas for calculating x from a and calculating y from b. (Or, write the coordinate transformation formula.)

b. What geometric transformations (using words like translation, stretch, and shrink), and in what order, would transform the first curve $y = f[x]$ into the second curve $y = 5 \cdot f[4\,(x+3)] - 2$?

Question 5

A parent square-root function is transformed in the following ways:

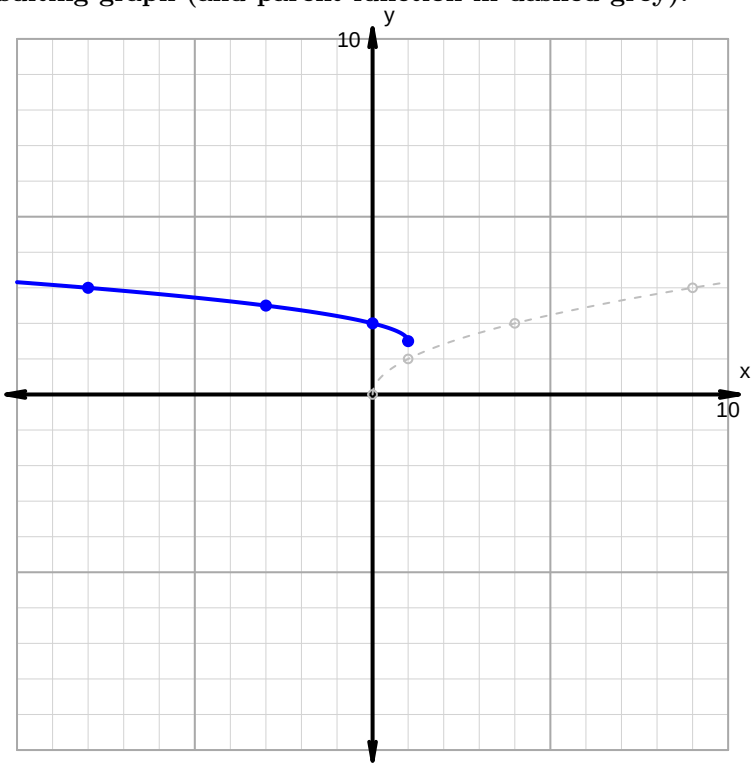
Horizontal transformations

1. Translate left by distance 1.
2. Horizontal reflection over y axis.

Vertical transformations

1. Translate up by distance 3.
2. Vertical shrink by factor 2.

Resulting graph (and parent function in dashed grey):

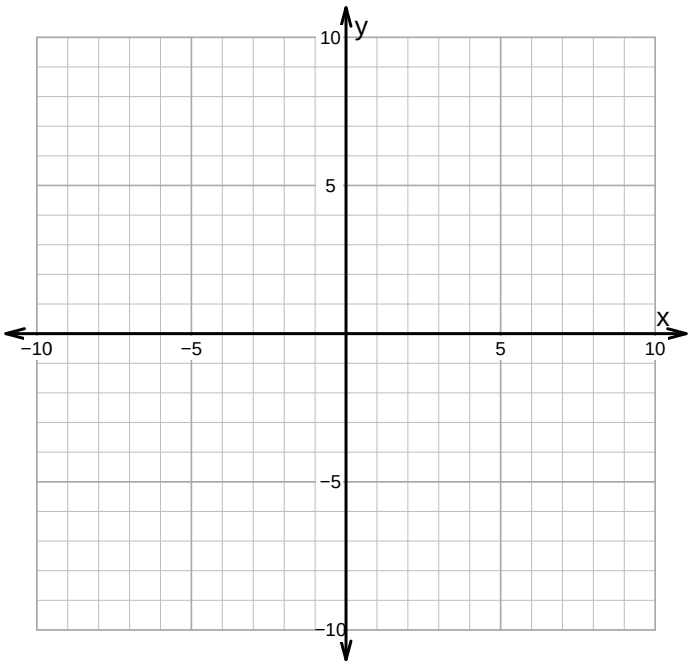


- What is the equation for the curve shown above?

Question 6

Make an accurate graph, and describe locations of features.

$$y = \frac{-1}{3} \cdot |x + 3| + 2$$



Feature	Where
Domain	
Range	
Positive	
Negative	
Increasing	
Decreasing	